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A REDESCRIPTION OF *HERMILIUS PYRIVENTRIS* HELLER (COPEPODA: CALIGOIDA) WITH THE FIRST DESCRIPTION OF THE MALE

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The genus *Hermilius* was described by Heller in 1868 to accommodate a new species of caligid copepod collected from the catfish *Arius acutus* in Java. Since then 3 additional species have been described; *H. longicornis* Bassett-Smith 1898, *H. armatus* Capart 1959, and *H. youngi* Kabata 1964. Kabata suggested that *H. armatus* might be synonymous with *H. pyriventris*. Examination of the material described below and its comparison with Capart's description of *H. armatus* has led me to this conclusion also.

Several specimens of *Hermilius pyriventris* Heller were sent to me by Dr. I. Paperna of the Hebrew University of Jerusalem. Additional specimens were collected by the author from the gills of catfish from India and the Philippines contained in the fish collections of the Smithsonian Institution.

A review of the literature concerned with the genus *Hermilius* revealed that no adequate description of the type-species exists. Pillai (1961) described a collection containing material which he identified as *H. pyriformis* but which Kirtisinghe (1964) showed to be *H. longicornis* Bassett-Smith.

All drawings were made with the aid of a Wild Drawing Tube.

All material has been deposited in the collections of the Smithsonian Institution.

The illustrations were made by Hillary Boyle.

Hermilius pyriventris Heller

Figures 1–21

Hermilius pyriventris Heller, 1868, p. 186.—Bassett-Smith, 1899, p. 445. —Brian, 1924, p. 393.—Capart, 1959, p. 91.

Hermilius armatus Capart, 1959, p. 90 non *H. pyriventris*.—Pillai, 1961 (= *H. longicornis* Bassett-Smith).

Material studied: 6 females from the gills of *Netuma macrocephalus* and 11 females from the gills of *N. thalassinus*, both hosts collected off the coast of Kenya. 16 females and 2 males from the gills of *Arius* sp. collected at Vizakhapatnam, India. 11 females from the gills of *Tachysurus* sp. (USNM 160551) from the Philippines.

Description: Female.—Body form as in Figures 1 and 2. Measurements (in mm) for total body length and width as below.

	No. of specimens	Avg. length	Avg. width	Range of length
N. thalassinus Vipingno, Kenya	5	2.05	0.56	1.84–2.38
N. thalassinus Diani, Kenya	3	5.40	1.33	5.03–5.77
N. macrocephalus Vipingno, Kenya	3	3.94	1.11	3.57–4.48
Trachysurus sp. Philippines	9	3.78	1.05	3.33–4.16
Arius sp. India	11	3.86	1.14	3.44–4.24

The specimens in the two collections from Kenya varied *significantly* in size but no morphological differences could be found between them —hence they are considered to be of the same species here. Measurements below are from a specimen in the Vipingno collection.

Cephalon about one-half of total body length, folding laterally to envelope that part of gill to which it is attached. (This modification is not uncommon to parasitic copepods which attach to gill filaments, *Lernanthropus*, *Metataeniacanthus*, and *Alicaligus* for example). Cephalon supported by several heavily sclerotized rods making it rather rigidly folded laterally and difficult to flatten for study. Genital segment (Fig. 3) longer than wide (968μ × 679μ), widest anteriorly. Abdomen (Fig. 4) 2-segmented, segments 136μ and 124μ in length

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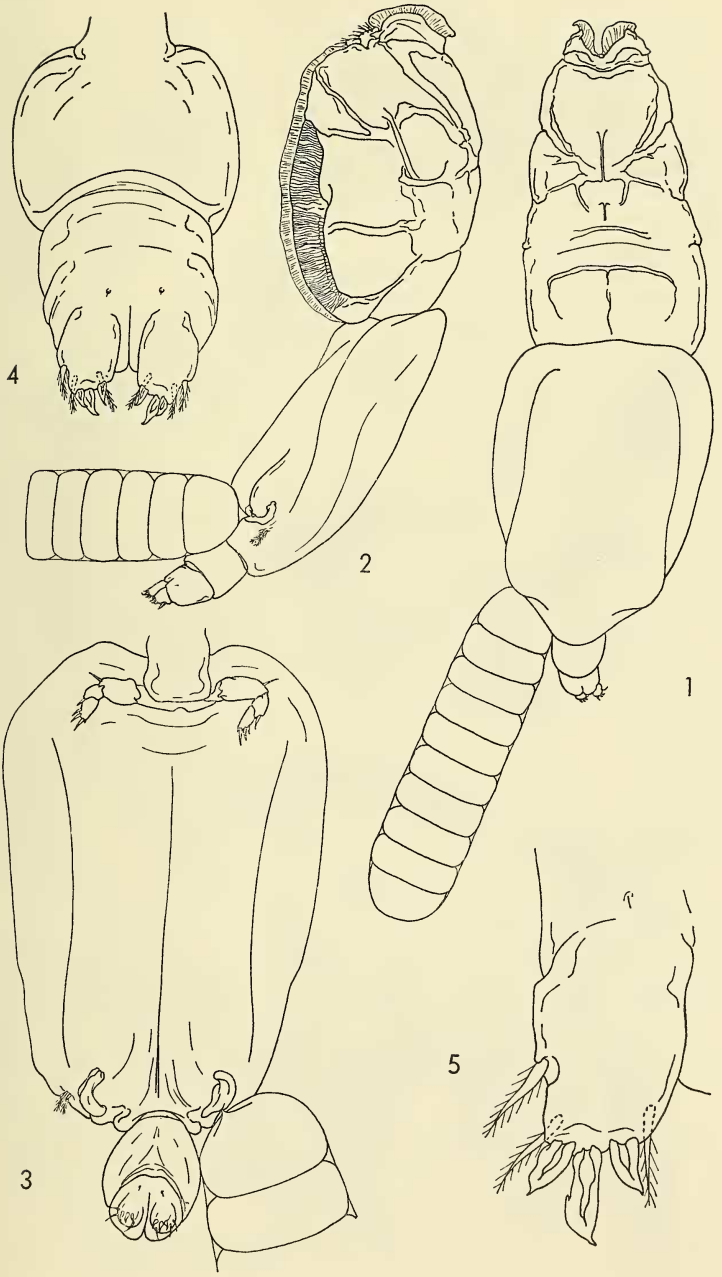
Figs. 1–5. *Hermilius pyriventris* Heller, female: 1, dorsal; 2, lateral; 3, genital segment and abdomen, ventral; 4, abdomen, ventral; 5, caudal ramus, ventral.

Figs. 6–12. *Hermilius pyriventris* Heller, female, cont: 6, first antenna; 7, second antenna; 8, mandible; 9, first maxilla; 10, second maxilla; 11, maxilliped; 12, sternal furca.

Figs. 13–16. *Hermilius pyriventris* Heller, female, cont: 13, leg 1; 14, leg 2; 15, leg 3; 16, leg 4.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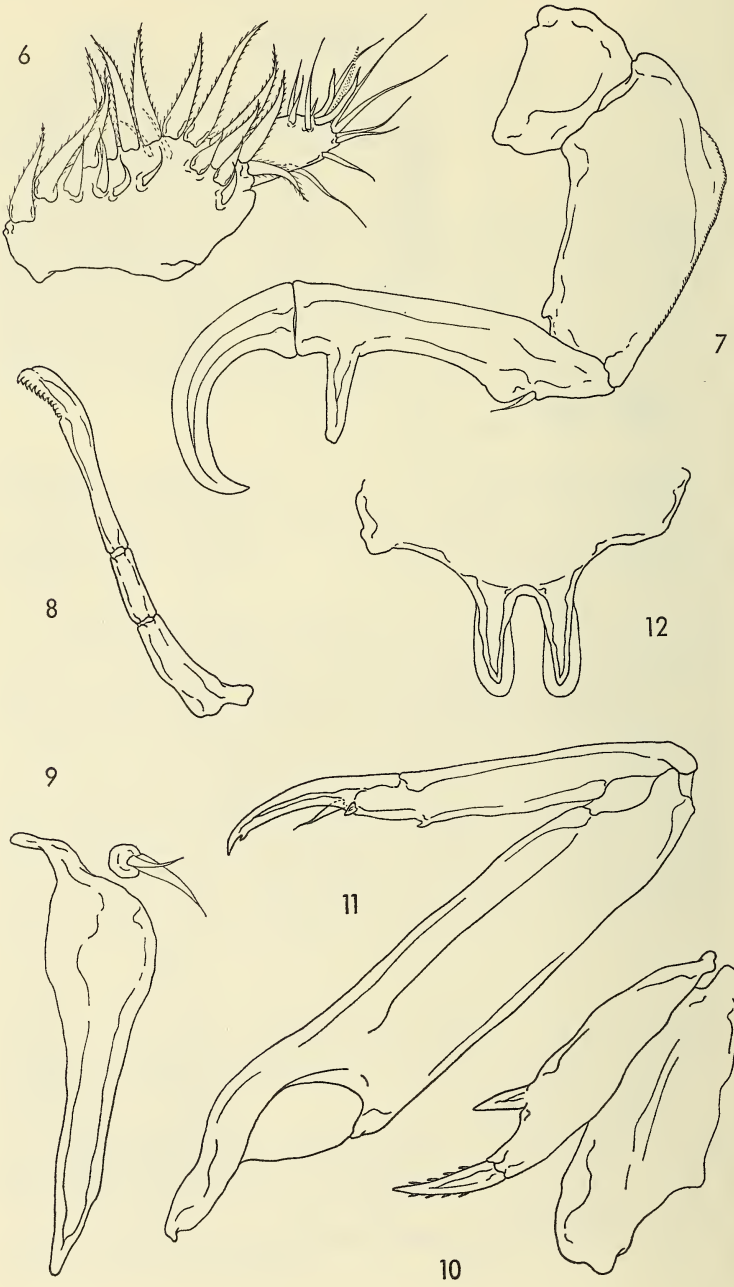
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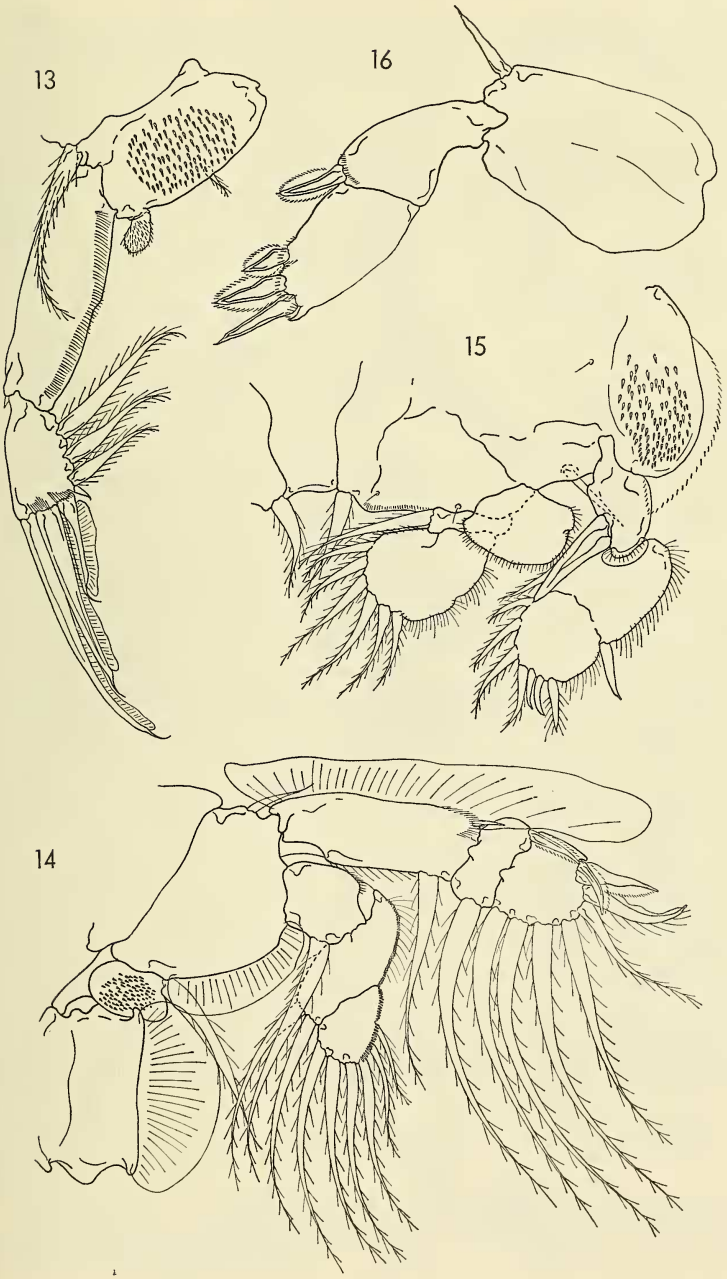
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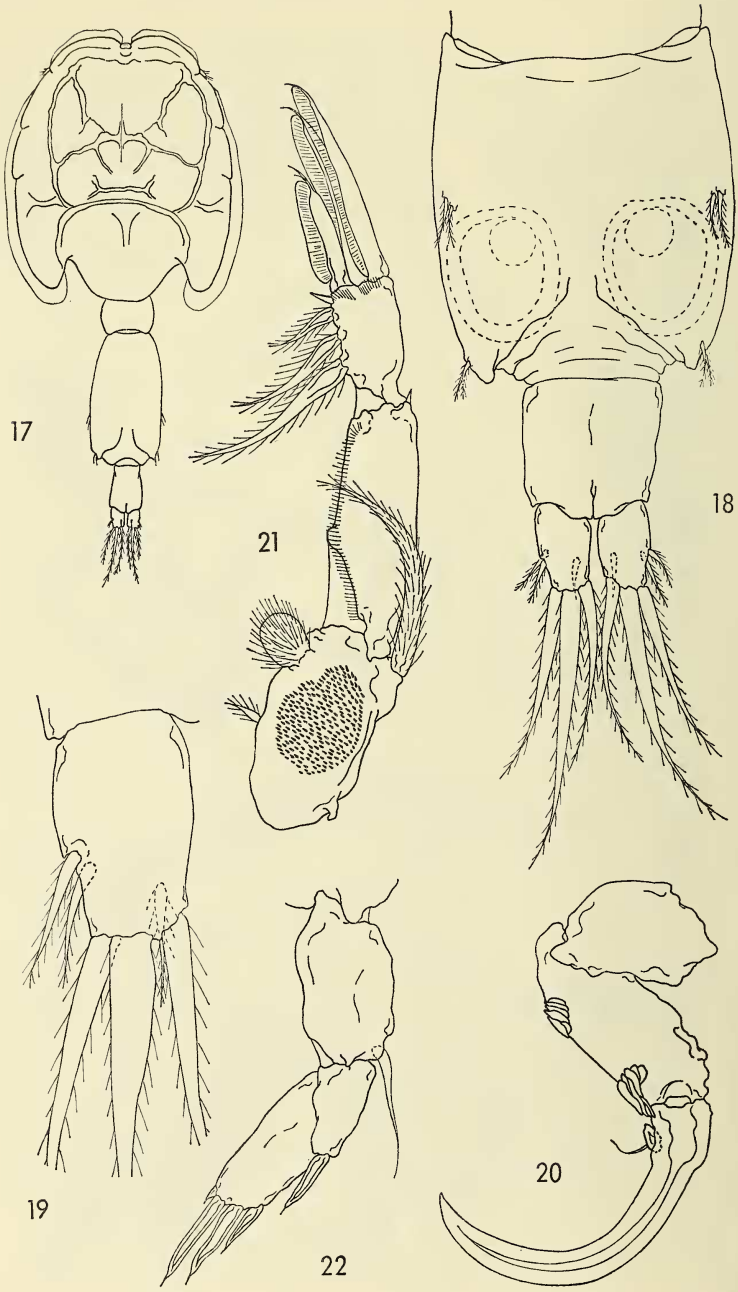
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respectively, each considerably wider than long. Caudal rami (Fig. 5) longer than wide (59μ × 47μ); each with 6 setae; terminal 3 short and pyriform; lateral and subterminal setae plumose, of about equal length.

First antenna (Fig. 6) 2-segmented; basal segment 94μ in length, bearing many stout finely plumose setae; terminal segment bearing 12 slender naked setae and one aesthete. Second antenna (Fig. 7) 4-segmented; segments measure 89μ, 295μ, 260μ and 183μ long respectively. Second segment with fine striations along inner edge. Terminal claw of 2 segments; first with short seta near base and accessory process near inner distal corner, second recurved to complete claw. Mandible (Fig. 8) of typical caligid type with 13 teeth. First maxilla (Fig. 9) a long sclerotized, posteriorly directed, process with 2 short setae near base; process situated lateral to and nearly as long as mouth tube. Second maxilla (Fig. 10) small, 2-segmented; terminal segment with short spinelike process near inner distal corner and terminal, finely serrate, spine. Maxilliped (Fig. 11) slender, 3-segmented, not heavily sclerotized; second segment with short barblike process on inner margin and short stout spine on inner distal corner, terminal segment slightly recurved bearing basal seta and short accessory barb near tip. Sternal furca (Fig. 12) weakly developed, tines spatulate.

Leg 1 (Fig. 13) basipod with patch of spinules and 2 plumose setae, one inner and one on outer distal corner; exopod 2-segmented, first segment with short spine on outer distal corner, second segment with 3 inner plumose setae and 3 terminal setae, each with inner hyaline membrane; endopod reduced to short spinulose process. Leg 2 (Fig. 14) exopod 3-segmented, first segment with inner seta and short outer distal spine, second segment with inner seta and longer outer distal spine, third segment with 5 terminal to inner setae and 3 terminal spines, outermost directed inwardly across other 2; endopod 3-segmented, first segment with inner seta, second segment with 2 inner setae, third segment with 6 setae, outer edges of last 2 segments with short blunt spinules. Leg 3 (Fig. 15) exopod 3-segmented, first segment with heavily sclerotized inwardly directed spine, second segment with short inner seta and outer distal spine, third segment with 7 short setae, second and third outer shorter and naked; endopod 3-segmented, first segment lobate, covering part of second and third segments, second segment short with inner seta, third segment with 6 setae. Leg 4 (Fig. 16) basipod with outer short seta; exopod 2-segmented, first segment with outer distal spine, second segment with 3 terminal

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Figs. 17–22. *Hermilius pyriventris* Heller, male: 17, dorsal; 18, genital segment and abdomen; 19, caudal ramus, ventral; 20, second antenna; 21, leg 1; 22, leg 4.

spines, innermost naked. Leg 5 absent. Leg 6 represented by 2 short plumose setae lateral to area of egg string attachment.

Egg strings of usual caligoid form.

Male.—Body form as in Figure 17. Total length and greatest width 1.53 × 0.68 mm. Cephalon about one-half of total body length. Cephalon folded laterally as in female to envelope gill filaments. Genital segment (Fig. 18) longer than wide (401μ × 212μ), spermatophores easily visible within. Abdomen 1-segmented, longer than wide (124μ × 100μ). Caudal ramus (Fig. 19) bearing 6 plumose setae, 2 lateral, 1 subterminal, and 3 terminal (longest seta 472μ long); each ramus longer than wide (59μ × 47μ).

Cephalic appendages as in female except second antenna. Second antenna (Fig. 20) 3-segmented (4 in female), without accessory process on claw.

Leg 1 (Fig. 21) similar to female except endopod relatively larger and 3 terminal exopod spines relatively shorter. Legs 2 and 3 as in female. Leg 4 (Fig. 22) similar to female except terminal spines of male relatively longer and without fringes. Leg 5 represented by 2 setae near midlateral margin of genital segment. Leg 6 represented by 2 setae at posterior corners of genital segment.

Remarks: *H. pyriventris* females can be easily separated from *H. longicornis* and *H. youngi* by the nature of the second antenna (4-segmented in *pyriventris* and 3-segmented in the other 2). The pyriform terminal setae of the caudal rami of *pyriventris* further separates them from females of *longicornis* and *youngi*. So far the genus has only been reported from species of marine catfish (Arridae) and has not been collected from waters adjacent to North and South America. I have examined many catfish from the Gulf of Mexico without finding *Hermilius*.

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